

**IN THE UNITED STATES DISTRICT COURT
FOR THE NORTHERN DISTRICT OF TEXAS
DALLAS DIVISION**

GENERAL ELECTRIC COMPANY,

Plaintiff,

v.

MITSUBISHI HEAVY INDUSTRIES,
LTD., and MITSUBISHI POWER
SYSTEMS AMERICAS, INC.,

Defendants.

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CIVIL ACTION NO. 3:10-CV-276-F

JURY TRIAL DEMANDED

GE'S OPENING CLAIM CONSTRUCTION BRIEF

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I.

INTRODUCTION

The General Electric Company has sued defendants (“Mitsubishi”) for infringement of U.S. Patents Nos. 6,879,055 (“the ’055 Patent”) and 7,629,705 (“the ’705 Patent”).¹ The ’055 and ’705 patents issued in 2005 and 2009, respectively. The parties have met and conferred and reached agreement on proposed constructions for some previously disputed claim terms. Other claim terms remain disputed, however, and are addressed below. The claim construction hearing is scheduled for January 13, 2011.

II.

LEGAL FRAMEWORK

The leading decision on claim construction is *Phillips v. AWH*, 415 F.3d 1303 (Fed. Cir. 2005) (*en banc*). *Phillips* explains that the purpose of claim construction is to determine how the claim terms would have been understood by a person of ordinary skill at the time when the original patent application leading to the patent at issue was filed, which in this case was 2001 for the ’055 Patent and 2006 for the ’705 Patent. *Id.* at 1313.

The primary resource in construing the claims is the intrinsic record, consisting of the patent itself and its prosecution history (to the extent the prosecution history is relevant and offered for consideration). *Phillips*, 415 F.3d at 1317. The specification is the “single best guide to the meaning of a disputed term.” *Id.* at 1315 (quoting *Vitronics Corp. v. Conceptronic, Inc.*, 90 F.3d 1576, 1582 (Fed. Cir. 1996)). But it is improper to import limitations into the claims from examples in the

¹ The ’055 and ’705 Patents are attached as Tabs 1 and 2 to the Appendix being filed with this brief.

specification. *See Phillips*, 415 F.3d at 1323 (“[A]lthough the specification often describes very specific embodiments of the invention, we have repeatedly warned against confining the claims to those embodiments”).

Extrinsic evidence such as dictionary definitions may also be considered during claim construction, but it is “less significant than the intrinsic record in determining the legally operative meaning of claim language.” *Phillips*, 415 F.3d at 1317 (citation omitted). Extrinsic evidence may not be used to contradict the intrinsic record. *Vitronics*, 90 F.3d at 1584. However, “absent contravening evidence from the specification or prosecution history, plain and unambiguous claim language controls the construction analysis.” *DSW, Inc. v. Shoe Pavilion, Inc.*, 537 F.3d 1342, 1347 (Fed. Cir. 2008). “In some cases the ordinary meaning of claim language as understood by a person of skill in the art may be readily apparent even to lay judges, and claim construction in such cases involves little more than the application of the widely accepted meaning of commonly understood words.” *Phillips*, 415 F.3d at 1314.²

² Extrinsic evidence of expert opinions may also be considered as extrinsic evidence if offered, *see Phillips*, 415 F.3d at 1317, but the parties have agreed not to call experts at the claim construction hearing and are not offering expert declarations.

III.

BACKGROUND ON WIND TURBINES³

The '055 and '705 Patents are concerned with wind turbines, which are large machines for converting wind energy into electrical energy. An example of a wind turbine is shown in Figure 1 of the '705 Patent, reprinted below:

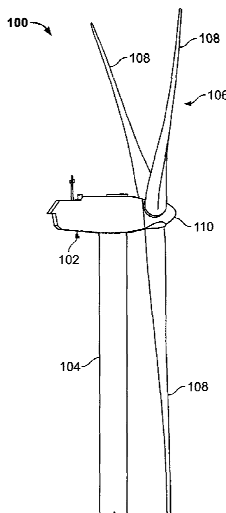


FIG. 1

'705 Patent, Figure 1

As shown in '705 Figure 1, wind turbine 100 has three rotor blades 108 which turn in the wind. GE Appendix ("GE App.") at 15 ('705 Patent at 2:36-38). The rotor blades 108 are attached to rotating hub 110. *Id.* ('705 Patent at 2:34-36). The rotor blades 108 and hub 110 are referred to together as the rotor 106. *Id.* Reference number

³ The following background information is taken from the '055 and '705 Patents. If the Court believes that further background information would be helpful, GE would be happy to work with Mitsubishi to provide a tutorial introduction. Mitsubishi has informed GE that as background, Mitsubishi will refer to Chapter 25, "Wind Turbines," of the Mechanical Engineers' Handbook: Energy and Power. GE has no objection to this chapter being considered – it was written by a GE engineer – but it provides very general information that is not closely related to the specific claim construction issues to be decided in this case.

102 shows the “nacelle” or housing for the generator. *Id.* (‘705 Patent at 2:30-31).

Nacelle 102 is mounted on tower 104. *Id.* (‘705 Patent at 2:31-33).

An example of the power conversion machinery contained inside a wind turbine housing is shown in Figures 1 and 2 of the ‘055 Patent, reprinted below:

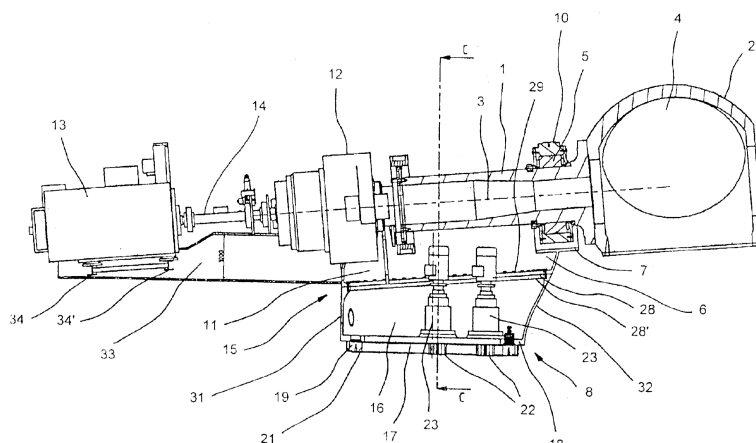


Fig. 1

‘055 Patent, Figure 1

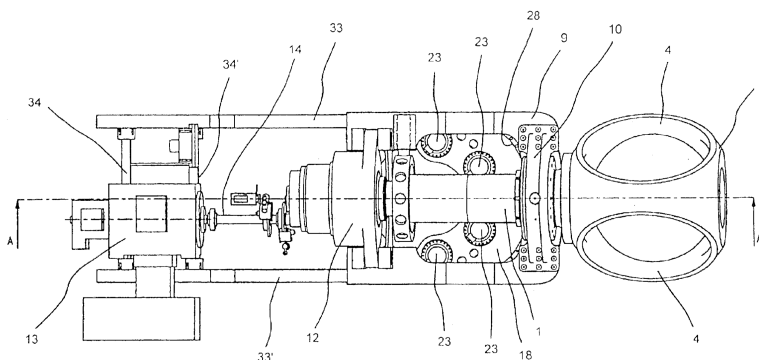


Fig. 2

‘055 Patent, Figure 2

These figures show a side view (‘055 Figure 1) and a top view (‘055 Figure 2) of a wind turbine drive train. GE App. at 6 (‘055 Patent at 4:3-8); *see also* GE App. at 1, 5 (‘055 Patent at Abstract, 1:20-25) (drive train). At the right side of the

figures, the drive train includes a rotor hub 2 which attaches to the rotor blades (not shown) through openings 4. GE App. at 6 ('055 Patent at 4:17-21). The hub is also attached to the rotor shaft 1, which rotates due to the action of the wind on the rotor blades. *Id.* ('055 Patent at 4:14-17). The shaft is connected to a gear 12 which increases the speed of rotation, in order to drive an electric generator 13 that converts the rotation of the shaft into electric power. *Id.* ('055 Patent at 4:39-42).

Because the direction of the wind varies, and a wind turbine can generate more power when it faces directly into the wind, the turbine is typically mounted in a way that allows it to rotate around the tower (that is, "azimuthally") when the wind direction changes. Figures 1 and 2 of the '055 patent show servomotors 23 which perform this azimuthal rotation according to the wind flow. GE App. at 6 ('055 Patent at 4:67-5:7).

The purpose of a wind turbine (like other electricity generating equipment) is typically to supply power to an electric power system. A wind turbine will typically include an electrical and control system to facilitate supplying power efficiently. An example of an electrical and control system is shown in Figure 2 of the '705 Patent, reprinted below:

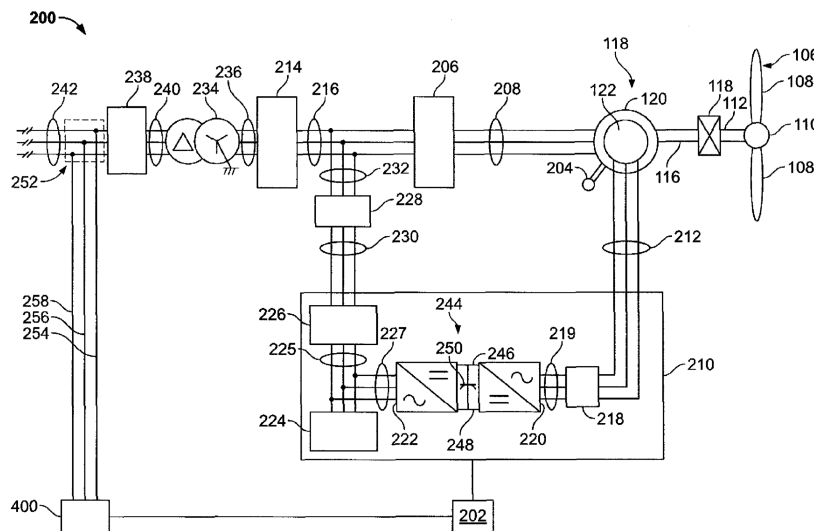


FIG. 2

'705 Patent, Figure 2

At the upper right, '705 Figure 2 shows wind turbine blades 108 and hub 110 attached through rotor shaft 112, gearbox 114,⁴ and high-speed shaft 116 to generator 118. GE App. at 15 ('705 Patent at 2:42-50, 2:61). The generator 118 is connected through circuit breaker and other equipment to the electric power grid bus 242, which connects to the electric power transmission and distribution grid at the upper left of the figure. GE App. at 16 ('705 Patent at 3:41-45, 4:16-21).

Figure 2 of the '705 Patent also shows, in the bottom half of the figure, other parts of a control system, which in this example include phase-locked loop regulator 400, controller 202, and bi-directional power conversion assembly 210. GE App. at 16 ('705 Patent at 3:45-48, 4:31-34, 4:40-43). The control system, among other

⁴ The gearbox is the box containing an “X” at the upper right in Figure 2. It is labeled as “118” in Figure 2, but this is a typographical error. The text explains that the gearbox is item 114, and it is the generator that is item 118. Figure 2 shows the generator (just to the left of the gearbox and high-speed shaft 116) correctly labeled as “118.”

things, synchronizes the wind turbine to the electric power system. *See, e.g.*, GE App. at 18-19 ('705 Patent at 7:18-27, 8:64-67, 9:38-41, 10:18-23, 10:62-67).

Electric power is typically supplied through “alternating” or oscillating current. For example, the 120 Volt, 60 Hertz power supplied to American homes is alternating current, with “60 Hertz” referring to the fact that it oscillates 60 times per second. It is valuable for the alternating current supplied by a wind turbine to be synchronized with the alternating current on the electric power system so that the power supplied by the wind turbine adds to the system instead of being cancelled out. One way to achieve this is shown in Figure 2, in which the control system takes the electric power system voltages on lines 254, 256, and 258 as a reference, and uses them to adjust the voltages on lines 212 fed back into generator 118 to synchronize it. *See* GE App. at 17 ('705 Patent at 5:33-39, 5:65-6:6).

IV. ARGUMENT

Because there are a greater number of claim construction disputes with regard to the '705 Patent, it is addressed first.

A. U.S. Patent No. 7,629,705

1. Overview

The '705 Patent, titled “Method And Apparatus For Operating Electrical Machines,” is concerned with responding to certain voltage fluctuations or “transients” on the electric power system to which the wind turbine is connected. GE App. at 15 ('705 Patent at 1:28-31). It is desirable to improve reliability by reducing the occasions when a wind turbine trips (that is, disconnects from the electric power system) due to system grid voltage disturbances. GE App. at 20 ('705 Patent at 11:27-29). Moreover,

grid voltage disturbances can cause significant damage to the electrical and control systems of a wind turbine. GE App. at 15, 17 ('705 Patent at 1:31-34, 6:47-55).

An example of a power system transient is shown in Figure 3 of the '705 Patent:

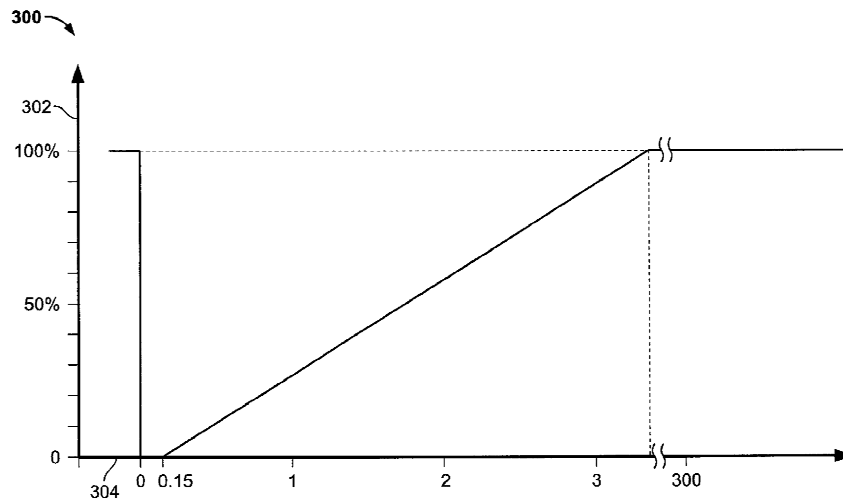


FIG. 3

'705 Patent, Figure 3

GE App. at 15, 17 ('705 Patent at 2:12-14, 6:62-63). '705 Figure 3 shows a graph of grid voltage versus time on the electric power system grid (for example, on bus 242 at the upper left in '705 Figure 2) that may be associated with the electrical and control system shown in '705 Figure 2. GE App. at 17 ('705 Patent at 6:19-37). The graph initially (at the left) shows the electric power system voltage running at 100% of its nominal value. *Id.* ('705 Patent at 6:26-28). The voltage then drops to zero for 0.15 seconds. *Id.* ('705 Patent at 6:30-34). The voltage then gradually increases back to 100% over the next approximately 3.5 seconds. *Id.*

The event shown in Figure 3 is an example of a zero voltage transient. GE App. at 17 ('705 Patent at 6:62-63). The ability of a wind turbine to “ride through” such

transients, without tripping off of the grid, is known as “zero voltage ride through” or ZVRT. *See* GE App. at 17-18, 20 (’705 Patent at 6:59-63, 8:43-46, 11:27-29). An electrical generator configured according to the graph shown in Figure 3 can remain connected to the grid during voltage fluctuations that result in the grid voltage dropping to approximately 0% for a duration of less than 0.15 seconds. For example, if a fluctuation occurs where the grid voltage drops to 0% for 0.05 seconds, the electrical generator can remain connected to the grid. However, if a fluctuation occurs where the grid voltage drops to 0% for 0.20 seconds, the electrical generator may trip offline after 0.15 seconds.

Claim 1 of the ’705 Patent recites a method for operating an electrical machine such as a wind turbine to facilitate ZVRT. Claim 1 provides:

1. A method for operating an electrical machine, said method comprising:

coupling the electrical machine to an electric power system such that the electric power system is configured to transmit at least one phase of electric power to the electrical machine; and

*configuring the electrical machine such that the electrical machine remains electrically connected to the electric power system during and subsequent to a voltage amplitude of the electric power system operating outside of a **predetermined range** for an **undetermined period of time**,*

said configuring the electrical machine comprising:

electrically coupling at least a portion of a control system to at least a portion of the electric power system;

coupling the control system in electronic data communication with at least a portion of the electrical machine; and

*configuring the electrical machine and the **control system** such that the electrical machine remains electrically connected to the electric power system during and subsequent to the voltage amplitude of the electric power system decreasing below the **predetermined range** including approximately*

zero volts for the undetermined period of time, thereby facilitating zero voltage ride through (ZVRT) [sic, ZVRT].

GE App. at 20 ('705 Patent at 11:42-67) (emphasis and formatting added). The italics show the two long phrases in claim 1 that Mitsubishi has asked the Court to construe. However, as explained below, the parties agree on portions of the constructions of these phrases. Portions where the parties disagree are shown by boldface and underlining in addition to the italics.

2. **“Configuring The Electrical Machine Such That . . . Remains Electrically Connected . . . During And Subsequent To . . . Operating Outside Of A Predetermined Range For An Undetermined Period Of Time” (Claim 1)**

Term(s)	GE's Proposed Construction	Mitsubishi's Proposed Construction
“configuring the electrical machine such that the electrical machine remains electrically connected to the electric power system during and subsequent to a voltage amplitude of the electric power system <u>operating outside of a predetermined range for an undetermined period of time</u>” [claim 1]	setting up the electrical machine such that the electrical machine remains electrically connected to the electric power system during and subsequent to a voltage amplitude of the electric power system <u>operating outside of a range determined in advance for a time period not determined in advance</u>	setting up the electrical machine such that the machine remains connected to the electric power system during and subsequent to the voltage amplitude <u>operating outside of a defined range, with no time limits placed on the period of time the machine remains connected to the electric power system when the voltage is outside the range</u>

The parties are largely in agreement on the first two-thirds of this claim term – “configuring the electrical machine such that the electrical machine remains electrically connected to the electric power system during and subsequent to a voltage amplitude of the electric power system.”⁵ Where the parties substantially differ is with

⁵ The differences with regard to the first two-thirds of the claim term (the portion not underlined in the chart above) are that Mitsubishi would omit one instance of each of the

respect to the last portion of the claim term – “operating outside of a predetermined range for an undetermined period of time.” Based on the intrinsic record and the ordinary meaning of the words used, GE construes this language to mean “operating outside of a range determined in advance for a time period not determined in advance.” GE’s proposed construction is discussed in greater detail below.

Mitsubishi would construe “operating outside of a predetermined range for an undetermined period of time” as “operating outside of a defined range, with no time limits placed on the period of time the machine remains connected to the electric power system when the voltage is outside the range.” This construction not only deviates from the plain meaning of the claim language, but also inserts a limitation into the claim (“with no time limits placed on the period of time the machine remains connected to the electric power system when the voltage is outside the range”) that is not required or even described anywhere in the specification.

a. A “Predetermined” Range Is A Range Determined In Advance

The disputed paragraph states that the electrical machine is configured to “remain electrically connected to the electric power system during and subsequent to a voltage amplitude of the electric power system operating outside of *a predetermined range*.” GE proposes that the phrase “a predetermined range” be construed as “a range determined in advance.” Mitsubishi proposes that it be construed as “a defined range.”

following words and phrases used in the actual claim language: “electrical,” “electrically,” and “of the electric power system.” Mitsubishi also proposes to use “the” in one place where the actual claim language uses “a.” These are not huge differences, but GE’s proposal should be adopted as more faithful to the actual claim language.

For the following reasons, GE's proposal should be adopted and Mitsubishi's should be rejected.

To begin with, "predetermined" is a non-technical word with a well-understood ordinary meaning that can readily be applied to construe the claim. "In some cases the ordinary meaning of claim language as understood by a person of skill in the art may be readily apparent even to lay judges, and claim construction in such cases involves little more than the application of the widely accepted meaning of commonly understood words." *Phillips*, 415 F.3d at 1314. The dictionary definitions cited by both sides show that "predetermined" is such a word, and that its ordinary meaning is well-captured as "determined in advance." The following table provides examples:

<p><i>The Chambers Dictionary</i>, 10th Ed., Chambers Harrap Publishers Ltd., at 1198 (2006). See GE App. at 25.</p>	<p>predetermine /prē-di-tūr'min/ <i>vt</i> to determine or settle beforehand. [pre-(1)] a predeter'minable <i>adj.</i> predeter'minate /-ət/ <i>adj</i> determined beforehand. predetermina'tion <i>n.</i> predeter'miner <i>n.</i> (<i>grammar</i>) a word or phrase preceding a determiner, such as <i>both</i>. predeter'minism <i>n.</i> determinism.</p>
<p><i>The Compact Oxford English Dictionary</i>, 2nd Ed., Oxford Univ. Press, at 331 (1989). See GE App. at 28.</p>	<p>predetermined (pri:di'tɜ:mɪnd), <i>ppl. a.</i> [f. prec. + -ED¹.] 1. Determined beforehand; settled, decided, or decreed beforehand. 1660 tr. <i>Amyrvaldus' Treat. conc. Relig.</i> III. ix. 496 Christ was born at the predetermin'd time. 1819 G. S. FABER <i>Dispensations</i> (1823) I. 94 How shall we account...for his having beheld from afar...the predetermined day of the yet future Deliverer? 1873 HAMERTON <i>Intell. Life</i> x. v. (1875) 394 A predetermined quantity of little things. 2. Resolved beforehand (to do something). 1768 STERNE <i>Sent. Journ.</i> (1775) I. 6, I was predetermined not to give him a single sou. 1772 JUNIUS <i>Let.</i> Pref. (1820) 14 No reasonable man would be so eager to possess himself of the invidious power...if he were not pre-determined to make use of it. 1872 MINTO <i>Eng. Prose Lit.</i> II. viii. 527 An audience predetermined not to be convinced.</p>
<p><i>Random House Webster's Unabridged Dictionary</i>, 2nd Ed., Random House, at 1522 (1997). See GE App. at 31.</p>	<p>pre-de-ter-mine (prē'di tūr'min), <i>v.t.</i>, -mined, -min-ing. 1. to settle or decide in advance: <i>He had predetermined his answer to the offer.</i> 2. to ordain in advance. predestine: <i>She believed that God had predetermined her sorrow.</i> 3. to direct or impel; influence strongly: <i>His sympathy for the poor predetermined his choice of a career.</i> [1615-25; PRE- + DETERMINE] —pre'de-ter'mi-na'tion, <i>n.</i> —pre-de-ter-mi-na-tive (prē'di tūr'mā-nā'tiv, -nə tiv), <i>adj.</i></p>

This is not a case where the word “predetermined” is used in the intrinsic record in a manner different from its ordinary meaning. “[A]bsent contravening evidence from the specification or prosecution history, plain and unambiguous claim language controls the construction analysis.” *DSW, Inc. v. Shoe Pavilion, Inc.*, 537 F.3d 1342, 1347 (Fed. Cir. 2008). There is nothing in the ’705 Patent specification or prosecution history to support Mitsubishi’s proposal that “a predetermined range” be construed as “a defined range” instead of “a range determined in advance.” Thus, it is GE’s construction that captures what is meant by “predetermined.”

b. An “Undetermined” Period Of Time Is One Not Determined In Advance

The disputed claim term continues by stating that the electrical machine is configured to remain connected “during and subsequent to a voltage amplitude of the electric power system operating outside of a predetermined range *for an undetermined period of time.*” GE contends that the italicized phrase should be construed as “a time period not determined in advance.” “In construing claims, an analysis must begin and remain centered on the claim language itself.” *Novartis Pharms. Corp. v. Abbott Labs.*, 375 F.3d 1328, 1334 (Fed. Cir. 2004). And this portion of claim 1 uses the word “undetermined” in contrast with the word “predetermined.” The voltage range of normal operation is “predetermined” – determined in advance – while the period of operation outside the normal range is “undetermined” – meaning not determined in advance.

This is confirmed by the rest of the intrinsic record. As in claim 1, the specification of the ’705 Patent uses the term “undetermined” to modify the phrase “period of time,” and the phrase “period of time” to refer to the amount of time that a

voltage amplitude of the electric power system is operating outside of a predetermined range. GE App. at 9, 15, 18 ('705 Patent at Abstract, 1:43-2:3, 8:29-37). Thus, the '705 Patent uses the word "undetermined" to refer to the duration of voltage fluctuations on the electric power grid such as the zero voltage transient shown in '705 Figure 3, reprinted on page 8 above. This is because the precise length of such fluctuations cannot be determined in advance. The '705 Patent explains that grid voltage fluctuations may occur "under certain circumstances," but that "the length of time of the zero voltage condition and the characteristics of a grid voltage recovery depend upon a variety of factors known in the art." GE App. at 15, 17 ('705 Patent at 1:28-31, 6:35-37). "Undetermined" should be construed as "not determined in advance" in the context of claim 1 and the '705 Patent as a whole.

Mitsubishi proposes to construe "an undetermined period of time" to mean "no time limits placed on the period of time the machine remains connected to the electric power system when the voltage is outside the range." This is more revision than construction. It appears that Mitsubishi intends to place a requirement on the invention of the '705 Patent that it allow a wind turbine to remain electrically connected to the electric power system, without tripping, for an unlimited period – "no time limits" – no matter how long the grid voltage is "outside the range" of its normal operation. That would import a requirement that is not present in claim 1 and is inconsistent with the '705 Patent specification, and that no real world power system would meet.

It is improper to import limitations into the claims. *See Phillips*, 415 F.3d at 1323. And it is even worse to import limitations that are inconsistent with the patent specification. *See North Am. Container, Inc. v. Plastipak Packaging, Inc.*, 415 F.3d

1335, 1348 (Fed. Cir. 2005) (“[U]nless required by the specification, limitations that do not otherwise appear in the claims, should not be imported into the claims.”). But Mitsubishi’s proposal would do just that. Nowhere in the ’705 Patent is there a description of an electrical machine that can remain electrically connected when grid voltage is outside of a predetermined range for a period with “no time limits.” Instead, the ’705 Patent repeatedly refers to the voltage events that it addresses as “fluctuations” and “transients,” meaning that they are not of unlimited duration. GE App. at 15 (’705 Patent at 1:28-31) (“Under certain circumstances, grid voltage fluctuations may be experienced that may include low voltage transients with voltage fluctuations that approach zero volts.”), 17 (’705 Patent at 6:62-63) (referring to “zero voltage transients such as that illustrated in FIG. 3”), 18 (’705 Patent at 8:43-46) (“Moreover, facilitating generator 118 to remain electrically connected to the grid during a ZVRT event subsequently facilitates generator 118 continuing to operate thereby supporting the grid during the transient.”). For example, the transient in Figure 3 is 0.15 seconds long. GE App. at 17 (’705 Patent at 6:31-32).

Moreover, the ’705 Patent teaches that in the exemplary embodiment described in the specification, there are a number of occasions on which the electrical machine may become disconnected from and de-synchronized with the power grid. GE App. at 19-20 (’705 Patent at 9:43-47, 10:1-4, 11:15-19). But Mitsubishi’s proposal, under which there are “no time limits placed on the period of time the machine remains connected to the electric power system when the voltage is outside the range,” seemingly would require it to remain connected. Thus, Mitsubishi’s proposal would exclude the disclosed exemplary embodiment and should be rejected on that basis alone. *Cf. MBO*

Labs., Inc. v. Becton, Dickinson & Co., 474 F.3d 1323, 1333 (Fed. Cir. 2007) (“[A] claim interpretation that excludes a preferred embodiment from the scope of the claim is rarely, if ever, correct.”).

The ’705 Patent also states that it “facilitates wind turbine generator reliability and wind turbine generator outages by reducing” – not eliminating – “the number of trips due to grid disturbances.” GE App. at 20 (’705 Patent at 11:27-29); *see also* GE App. at 17 (’705 Patent at 6:58-63) (stating that ZVRT capability “mitigate[s],” not eliminates, “wind turbine generator trip and associated consequences”). A system in which the wind turbine never trips, no matter how long the grid voltage disturbance, is not required for the invention of the ’705 Patent.

Finally, Mitsubishi has cited to the prosecution history of the ’705 Patent in an attempt to buttress its proposed construction. But in the Office Action dated February 11, 2009, the Patent Examiner rejected certain of the then-pending claims, which included the claim term now in dispute, as obvious in view of a combination of two references. GE App. at 34-35. One of those references was U.S. Patent Application No. 2004/0145188, an earlier GE patent application, which the Examiner referred to as “Janssen et al” after the name of the lead inventor. Janssen is significant here because the Examiner found that Janssen discloses “that power systems can have power fluctuations outside a range for *an undetermined period of time* (paragraph 0016) and maintains an electrical machine connected to the system (paragraphs 0027, 0029).” GE App. at 35 (emphasis added). One of the passages from the Janssen patent application that the Examiner’s statement cited, paragraph 0016, refers to Figure 1 of that application, which is similar to Figure 3 in the ’055 Patent. *See* GE App. at 39 (Janssen at Fig. 1). Figure 1

of the Janssen application shows a transient low voltage event, of limited duration, that is followed by return of the grid voltage to its normal operating range. *See* GE App. at 39, 45 (Janssen at ¶ 0016 & Fig. 1). Paragraph 0016 goes on to say that “*During this voltage fluctuation*, the wind turbine generator must remain connected to and synchronized with the power grid to satisfy low voltage ride through specifications.” GE App. at 45 (paragraph 0016) (emphasis added). Thus, the period of low voltage fluctuation that the Examiner referred to in Janssen as “an undetermined period of time” was of limited duration. It did not have “no time limits.” The Patent Examiner understood that the phrase “an undetermined period of time” does not require remaining electrically connected to the electric power system for a period with “no time limits.”

3. **“Configuring The Electrical Machine And The Control System Such That . . . Remains Electrically Connected . . . During And Subsequent To . . . Decreasing Below The Predetermined Range Including Approximately Zero Volts For The Undetermined Period Of Time, Thereby Facilitating Zero Voltage Ride Through (ZRV) [sic, ZVRT]” (Claim 1)**

Term(s)	GE’s Proposed Construction	Mitsubishi’s Proposed Construction
“configuring the electrical machine <u>and the control system</u> such that the electrical machine remains electrically connected to the electric power system during and subsequent to the voltage amplitude of the electric power system decreasing below the predetermined range including approximately zero volts for the undetermined period of time, <u>thereby facilitating zero voltage ride through (ZRV) [sic, ZVRT]</u>” [claim 1]	setting up the electrical machine <u>and the control system</u> such that the electrical machine remains electrically connected to the electric power system during and subsequent to the voltage amplitude of the electric power system decreasing below the range determined in advance, including approximately zero volts, for the time period not determined in advance, <u>thereby facilitating zero voltage ride through (ZVRT)</u>	setting up the electrical machine such that the machine remains connected to the electric power system during and subsequent to the voltage amplitude decreasing below the defined range, including to approximately zero volts, with no time limits placed on the period of time the machine remains connected to the electric power system when the voltage is below the range

This disputed term in claim 1 of the ’705 Patent is similar to the first term discussed above and includes the same phrases “predetermined range” and “undetermined period of time.” Those phrases should be construed as GE proposes for the reasons explained in Section IV.A.2. above.

This disputed term also contains a few additional limitations. The two additions that present an additional dispute are shown in italics and underlining in the chart above. GE’s proposed construction includes both additions, as shown by the italicized and underlined portions of GE’s proposed construction. However, Mitsubishi

seeks to eliminate both of these additions from its proposed construction. Mitsubishi's attempt to rewrite the claims in this manner should be rejected.

Claim construction no more permits removing limitations from the claims than it does importing limitations into the claims. *Ethicon Endo-Surgery, Inc. v. U.S. Surgical Corp.*, 93 F.3d 1572, 1582-83 (Fed. Cir. 1996). But Mitsubishi's proposed construction would remove the phrases "control system" and "facilitating zero voltage ride through (ZRVV) [sic, ZVRT]." ⁶ The omissions should be rejected. The omission of "control system" would appear to imply that the electrical machine in question is configured or set up such that it can achieve zero voltage ride through without the involvement of its control system. ⁷ But both claim 1 and the description of the exemplary embodiment in the '705 Patent specification state that the control system is configured along with the electrical machine such that the electrical machine remains connected during a zero voltage event. For example, the specification includes a lengthy description of how various portions of the control system in the exemplary embodiment are used to facilitate zero voltage ride through. GE App. at 17, 18-20 ('705 Patent at 6:56-67, 8:29-11:19).

⁶ Due to a transposition of characters, claim 1 states "ZRVV" instead of "ZVRT." It is plain on the face of claim 1 that "ZVRT" is intended, because that is the acronym for Zero Voltage Ride Through. Moreover, "ZVRT" is used throughout the specification of the '705 Patent. *See, e.g.*, '705 Patent at 6:59, 6:63, 8:42, 8:62, 10:67, 13:16.

⁷ Were the phrase "control system" not present in the actual claim language, as is the case with the first disputed claim term discussed in Section IV.A.2. above, Mitsubishi's proposal would not present the same concern. But in the case of the present disputed claim term, the phrase "control system" is present. The deliberate omission of "control system" in Mitsubishi's construction of the present disputed term could lead to confusion by wrongly implying that zero voltage ride through must be achieved without the involvement of the control system.

The omission of the phrase “thereby facilitating zero voltage ride through” presents similar concerns. Mitsubishi’s proposal divorces the claim from its intended purpose to facilitate zero voltage ride through. That purpose is relevant and provides meaningful guidance regarding the scope of the claim. *See, e.g.*, GE App. at 17 (’705 Patent at 6:63-67) (“ZVRT is contrasted to low voltage ride through (LVRT) features known in the art that facilitate mitigating wind turbine generator 100 trips during transients wherein the voltage amplitude rapidly decreases, yet does not decrease to zero volts.”).

B. U.S. Patent No. 6,879,055

1. Overview

The ’055 Patent is titled “Base Frame For Mounting The Shaft Of The Rotor Of A Wind Power Plant Onto The Plant Tower.” The ’055 Patent explains that the wind turbine housing can become larger and heavier as the size of the wind turbine, and thus the power it can generate, increases. GE App. at 5 (’055 Patent at 1:28-31). “This presents a considerable problem in the erecting of wind power plants, because it is more and more difficult, with increasing dimensions and weight, to perform the transport to the building site and the assembly.” *Id.* (’055 Patent at 1:31-35). The invention of the ’055 Patent addresses this problem by using a novel “base frame,” which the parties have agreed is “a support structure that carries the drive train and the azimuthal drive device.” November 1, 2010 Joint Claim Construction And Prehearing Statement, Exh. A (agreed construction for “base frame”).

The base frame of the ’055 Patent is divided into an upper part carrying the drive train, and a lower part that has the azimuthal drive device (used to rotate the wind turbine to face into the wind). GE App. at 5 (’055 Patent at 1:7-12). This divides

the total mass and the total size into two parts that can be transported and lifted more easily. *Id.* ('055 Patent at 1:46-49). “At the construction site, only the lower part needs to be mounted onto the tower and the upper part needs to be mounted onto the lower part, while all other assembly work already anticipated at the factory is not necessary.” *Id.* ('055 Patent at 1:59-62).

In the '055 Patent, the upper part and lower parts of the base frame are combined at a “connection point.” GE App. at 5 ('055 Patent at 1:12-14). “Connection point” is the only disputed term in the '055 Patent to be construed. It appears in asserted claim 1 of the '055 Patent, which provides:

1. An apparatus, comprising:

A base frame for the arrangement of a drive train, which is driven by a wind-driven rotor of a wind power plant, on the tower of the wind power plant on which the base frame is affixed with an essentially horizontal orientation of the rotor axis so that it can rotate azimuthally around the essentially vertical axis of the tower and is constructed from

a discrete upper part that carries the drive train and

a discrete lower part that has an azimuthal drive device that is attachably joined with the upper part at a **connection point**,

wherein the lower part provides for azimuthal rotation around the essentially vertical axis of the tower,

wherein the **connection point** extends along an essentially horizontal cross-section that has a larger dimension in the direction of the rotor axis than in the direction perpendicular to that.

GE App. at 7 ('055 Patent at 6:47-62) (emphasis and formatting added).

The term “connection point” also appears in claims 3 and 4 of the '055 Patent, which are “dependent” claims including all of the requirements of claim 1 plus

additional requirements. GE does not presently accuse Mitsubishi of infringing claims 3 and 4, but they provide useful context and thus are reprinted below:

3. The apparatus according to claim 1, wherein the **connection point** of both the upper part and the lower part extends in a plane extending parallel to the rotor axis and perpendicularly to the tower axis.
4. The apparatus according to one of the claims 1, 2 or 3, wherein each of the upper part and the lower parts has a flange that is essentially radial in relation to the tower axis in the area of the **connection point**, and the end faces of the flange which face each other can be clamped together.

GE App. at 8 ('055 Patent at 7:9-13) (emphasis added).

2. “Connection Point” (Claim 1)

Term(s)	GE’s Proposed Construction	Mitsubishi’s Proposed Construction
“ connection point ” [claim 1]	area of contact between the upper part and the lower part of the base frame	the point where the lower part and the upper part are joined together to form the base frame

The parties agree that this claim term refers to the connection between the upper and lower parts of the base frame, but disagree regarding how to describe that connection. First, GE proposes that the term be construed to refer to the “area” of contact between the upper and lower parts. In the '055 Patent, the connection point is an area, not a single mathematical point, and GE’s proposal will avoid possible confusion on this. Second, GE opposes Mitsubishi’s proposal to add to the end of the construction the phrase “joined together to form the base frame.” Mitsubishi’s proposal should be rejected because it would import an extra limitation into the claims, regarding how the connection between the upper and lower parts is made, that is not required and is inconsistent with the '055 Patent.

**a. “Connection Point” Means Area Of Contact Between
The Upper And Lower Parts Of The Base Frame**

The starting point in claim construction is the claims themselves, which provide the “objective baseline from which to begin claim interpretation.” *Phillips*, 415 F.3d at 1311. And the ’055 Patent claims make clear that the “connection point” is an area of contact and not just a single mathematical point. Claim 1 recites not only that the lower part is “attachably joined with the upper part at a connection point,” but also that the connection point “extends along an essentially horizontal cross-section.” GE App. at 7 (’055 Patent at 6:59-62). In a similar vein, dependent claim 3 states that the connection point “extends in a plane.” GE App. at 8 (’055 Patent at 7:7). If the connection point were a single mathematical point, it could not “extend along” the cross-section or “extend in” a plane. Finally, dependent claim 4 expressly refers to “the *area* of the connection point.” GE App. at 8 (’055 Patent at 7:12) (emphasis added).

The specification provides further support for GE’s proposal. The specification describes the embodiment in Figure 4 of the ’055 Patent as “a view of a connection point between a lower and an upper part of a hollow body of the base frame shown in FIG. 1 to 3.” GE App. at 6 (’055 Patent at 4:11-13). ’055 Figure 4 shows:

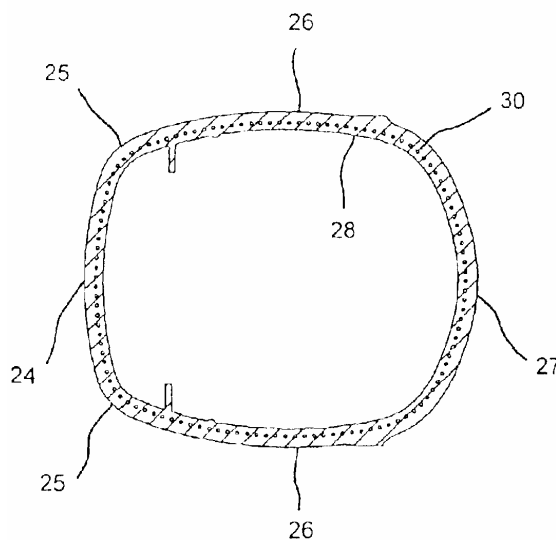


Fig. 4

'055 Patent, Figure 4

In this example, the entire ring is the connection point, including sections 24, 26, and 27. *See* GE App. at 7 ('055 Patent at 5:20-33) (detailed description of Figure 4). Again, the connection point is an area of contact and not a single mathematical point. GE's proposal will avoid possible confusion in the mind of a juror who might mistakenly believe that the word "point" means a single mathematical point in this context.

b. Mitsubishi's Proposal Would Import Additional Limitations Into The Claims And Should Be Rejected

It is improper to import limitations into the claims. *See Phillips*, 415 F.3d at 1323. However, Mitsubishi's proposed construction of "connection point" does just that by importing language, regarding how the connection between the upper and lower parts of the base frame is made, that is both unnecessary and inaccurate.

Mitsubishi proposes that "connection point" be construed as "the point where the lower part and the upper part are *joined together to form the base frame*." The

italicized portion of this construction would import a limitation by requiring the connection between the parts of the base frame to be made in a particular way. Moreover, the italicized portion is unnecessary because claim 1 already includes other language that expressly provides for how the upper and lower parts are connected. Claim 1 already states that the lower part of the base frame is “*attachably joined* with the upper part at a connection point.” GE App. at 7 (’055 Patent at 6:54-57) (emphasis added). Thus, there is no need to include the concept of joining in the construction of “connection point.” Moreover, Mitsubishi’s proposal is inaccurate to the extent that Mitsubishi intends, or the finder of fact might perceive, a difference between “joining” and “attachably joining” the two parts of the base frame. The express claim language already states that the parts are “attachably joined,” and the express claim language need not be expanded on or disturbed.⁸

Mitsubishi’s proposal also presents the risk of jury confusion. By referring to “the” point where the upper and lower parts “are joined together,” Mitsubishi appears to suggest that there must be an act of joining (such as clamping) of the upper and lower parts throughout every portion of the connection point. If so, this would import a limitation that is not required and is inconsistent with the ’055 Patent. As noted above, claim 1 calls for the upper and lower parts to be attachably joined “at a connection point.” It does not require the parts to be joined “throughout” the connection point. Moreover, the purpose of the ’055 invention, as discussed above, is to simplify transport and assembly of modern wind turbine power plants by breaking them into discrete subparts while maintaining sufficient stability once they are re-assembled. GE App. at 5

⁸ Mitsubishi has not requested to construe “attachably joined.”

(’055 Patent at 1:28-45; 1:64–2:3). This does not require clamping or other joining throughout every portion of the connection point.

Moreover, Mitsubishi’s proposal ignores the effect of dependent claim 4. “[T]he presence of a dependent claim that adds a particular limitation gives rise to a presumption that the limitation in question is not present in the independent claim.” *Phillips*, 415 F.3d at 1315; *see also Versa Corp. v. Ag-Bag Int’l Ltd.*, 392 F.3d 1325, 1330 (Fed. Cir. 2004) (independent claim should not be construed in a manner that renders dependent claim superfluous). Claim 4, which depends from independent claim 1, recites that each of the upper and lower parts of the base frame “*has a flange that is essentially radial in relation to the tower axis in the area of the connection point, and the end faces of the flange which face each other can be clamped together.*” GE App. at 8 (’055 Patent at 7:9-13) (emphasis added). Claim 4 thus provides for the upper and lower parts to have flanges that are clamped together “in the area of the connection point.” If such joining were required for all “connection points” within the scope of the ’055 Patent, then claim 4 would be superfluous. Again, Mitsubishi’s proposed construction should be rejected.

V.

CONCLUSION

For the foregoing reasons, GE's proposed constructions should be adopted.

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Respectfully Submitted

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CERTIFICATE OF SERVICE

The undersigned hereby certifies that a true and correct copy of the foregoing document was served on counsel for all parties through their respective counsel of record through the Court's ECF service this 6th day of December, 2010.

s/ Carmen E. Bremer